

Approximating Surface Matrix Band for Dentist to Use for Patients

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Date: February 1st, 2026 - February 5th, 2026

Client: Dr. Donald Tipple

Advisor: Prof. Beth Meyerand

Team:

Roshan Patel - rgpatel3@wisc.edu (Team Leader)

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Problem statement

Surface matrix bands are devices used by dentists to separate adjacent teeth during restorations of interproximal cavities (cavities found in-between two teeth). The matrix band serves to support the restoration material, to provide shape and contour to the tooth being restored, and to protect the adjacent tooth. Ideally, the width of the space between the two adjacent teeth is just large enough to fit one matrix band in order to ensure close proximal contact area, which prevents food impaction and decay. In the case of two cavities on two adjacent teeth, this process is tedious, as the dentist must complete the process from start to finish for each adjacent tooth individually. The goal of this project is to create a dental matrix band that effectively partitions adjacent teeth for more efficient tooth restoration procedures on interproximal cavities by making it possible to complete two adjacent restorations simultaneously.

Brief status update

We have connected with Dr. Williams and have begun material testing on the new laser cutter.

Summary of weekly team member design accomplishments

- Roshan Patel
 - Research on material properties
- Anya Hadim
 - Met with Dr. Meyerand to discuss testing and design changes
 - Communicated laser cutting testing with Dr. Williams
- Keleous Lange
 - Met with Dr. Meyerand to discuss preliminary design and statistical analysis
- Tanya Predko
 - Met with the advisor to discuss testing plans and design changes
- Joseph Koch
 - Worked on files for laser cutter
 - Created dimensioned files for scaling
 - .svg files for cutting

Difficulties / advice requests

Current design

N/A

Materials and expenses

Item	Description	Manufacturer	Mft Pt#	Vendor	Date	#	Cost Each	Total	Link
Category 1: Testing Materials									
Stainless Steel sheet	316 Stainless Steel Shim Stock	McMaster Carr	2317 K51	McMaster Carr	11/07	1	22.55	\$22.55	https://www.mcmaster.com/2317K51/
								\$0.00	
Category 2: Final Prototype									
								\$0.00	
								\$0.00	
							TOTAL	\$22.55	
							:		

Meetings															
Client															
Advisor															
Website															
Update															

Filled boxes = projected timeline
 X = task was worked on or completed

Previous week's goals and accomplishments

- N/A